

### Trend Study 8B-3-00

Study site name: Bear Top Mountain .

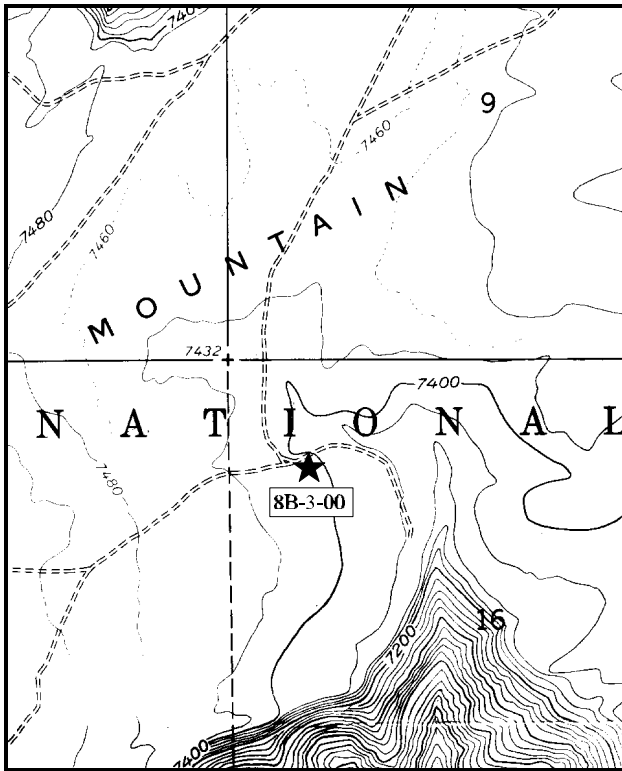
Range type: Big Sagebrush-Grass .

Compass bearing: frequency baseline 165°M.

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

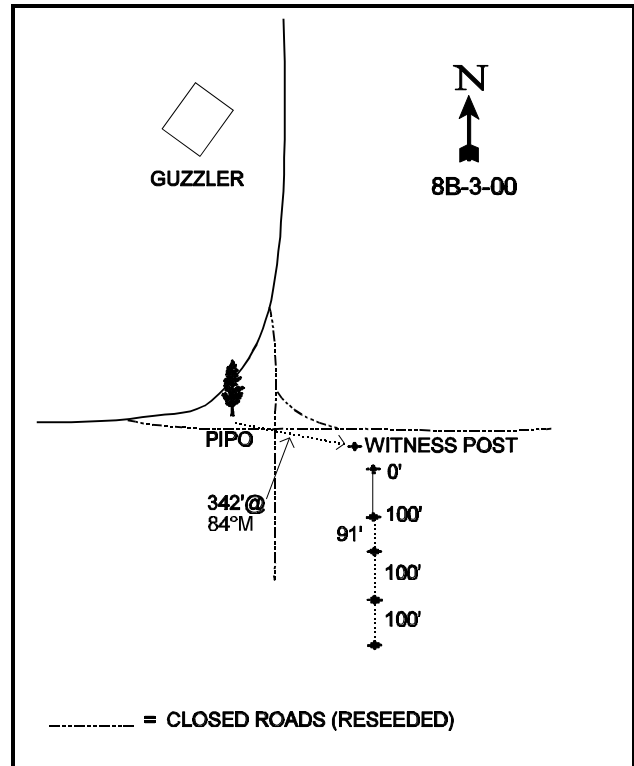
### LOCATION DESCRIPTION

From the intersection of Highway U-260 and U.S. 191 northwest of Dutch John, proceed west towards Antelope Flat campground for 3.6 miles. Turn left, and proceed on the dirt road towards Bear Top Mountain for 0.35 miles to a locked gate. Go through the gate and continue 0.1 miles to a new fence. Continue up the mountain approximately 5.2 miles to a large Ponderosa pine. From the pine, the witness post is 342 feet at 84°M. The 0-foot stake is 13 feet south of the witness post. It is marked with a red browse tag #7095.



Map Name: Flaming Gorge

Township 2N, Range 21E, Section 16



Diagrammatic Sketch

UTM 4530102.930 N, 620962.749 E

## DISCUSSION

### Trend Study No. 8B-3 (9-3)

The Bear Top Mountain study is on Bear Top Mountain at an elevation of 7,400 feet. The site is on nearly level terrain with a slight southeast aspect and lies about 1/4 mile from the cliffs overlooking Flaming Gorge Reservoir. The area is classified as a sagebrush-grass type, which demonstrates great diversity in both vegetative composition and wildlife use. Antelope, mule deer, elk, bighorn sheep, and sage grouse have been observed in close proximity to the site during past readings. Rocky Mountain bighorn sheep were transplanted in the early 1980's and utilize the area as summer range. Two nearby guzzlers provide water for wildlife. Livestock have been excluded since the early 1960's. The area was burned in 1998 as part of a prescribed fire to clear the rim of Bear Top Mountain for big horn sheep habitat. However, the fire eliminated most of the shrubs on the site. Pellet group transect data collected near the trend study baseline in 2000 estimate 7 elk days use/acre (18 edu/ha). In addition, sage grouse, coyote, and marmot droppings were all sampled in the pellet group transect as well.

Soil on the site is moderately shallow and very rocky. Effective rooting depth is estimated at just over 10 inches with most of the rock found in the top 8 inches of the soil profile. Bed rock is also exposed in many places on the surface with rock and pavement providing nearly 14% cover. Soil texture is a sandy loam which has a neutral pH. Phosphorus is limited at only 4.5 ppm. Values less than 10 ppm can limit normal plant growth and development. Due to the levelness of the terrain, erosion is not a problem on this site. Between 1995 and 2000, vegetation and litter both decreased sharply, while bare ground tripled over the same period. These drastic changes are due mostly to the loss of vegetative cover, especially browse cover, following the burn that occurred between the two sampling periods. However, this effect has also been made more severe by the drought that occurred during the fall of 1999, and the winter and spring of 2000.

The key browse species prior to the fire was a moderately dense stand of mountain big sagebrush which made up 81% of the browse cover in 1995. Other browse species included bitterbrush, mountain low rabbitbrush, gray horsebrush, and low numbers of broom snakeweed. Mountain big sagebrush cover was estimated at 19% in 1988 and 15% in 1995. Density has ranged from 9,065 plants/acre in 1988 to 5,200 in 1995. The number of young and decadent sagebrush fluctuated between 1982 and 1995, but the number of mature plants remained stable at around 4,000 individuals/acre. Percent decadency was low at 11% in 1995 with normal vigor on all but 36% of the decadent shrubs which were classified as dying. Use was light to moderate in 1982 and 1988, but heavy in 1995 with 60% of the plants displaying heavy use (>60% of twigs browsed).

Antelope bitterbrush was picked up in the larger sample used in 1995. Density was estimated at 120 mature plants/acre, 50% of which were heavily hedged. Even at this moderately low density, bitterbrush made up 14% of the total browse cover in 1995, making it the second most productive browse species. Mountain low rabbitbrush was fairly common but mostly unutilized. The change in density between 1988 and 1995 is primarily the result of the greatly increased sample size which better estimates shrubs with clumped or discontinuous distributions.

After the area was burned in 1998, total shrub cover declined from 18% in 1995 to 2% in 2000. Due to the spotty nature of the fire, some sagebrush survived. Density of mountain big sagebrush is currently ('00) estimated at 320 plants/acre. Use is light to moderate and vigor is normal on most plants. However, percent decadence has increased to 44%. One seedling and no young plants were sampled in 2000. There are also a few surviving and/or resprouting bitterbrush, fendler ceanothus, and gray horsebrush. The most common shrub on the site is the resprouting mountain low rabbitbrush which numbers 880 plants/acre. They are small plants averaging only 4 inches in height. They show no use and good vigor.

Grasses and forbs are abundant and diverse. Ten perennial grasses were encountered in 1995 which provided 20% of the vegetative cover. The most numerous species included: mutton bluegrass, needle-and-thread, Sandberg bluegrass, and thickspike wheatgrass. Forbs provided 36% of the vegetative cover with 27 perennial and 7 annual species sampled in 1995. Sulfur eriogonum and silvery lupine were numerous and provided good forage for summering big game animals. After the burn, the grass composition was basically unchanged except that total grass cover increased from 8% in 1995 to 14% in 2000. Forbs are still diverse yet the sum of nested frequency and cover have declined by about 50%. Sulfur eriogonum, silvery lupine, rock goldenrod and phlox are still the dominant perennial species. Much of the lupine was heavily utilized in 2000.

#### 1982 APPARENT TREND ASSESSMENT

The overall range trend appears stable. Soil trend may even be improving as a result of level terrain and the withdrawal of livestock grazing. Vegetatively, the area supports a fair density of rather low-growing mountain big sagebrush with a strong grass understory which may be equally dominant. At this point, it is difficult to judge which vegetative element is gaining the upper hand. Future readings of the study should provide some useful data in this regard.

#### 1988 TEND ASSESSMENT

Basal vegetative cover has remained stable, although protective ground cover of litter and cryptogams has increased only slightly. Percent bare ground is currently estimated at 19%. Due to the level terrain and abundant vegetation and litter cover, erosion is not a problem. Trend for soil is slightly improved. The browse trend is up with an increase in population density of the key browse species, mountain big sagebrush. Percent decadency has increased, but 28% of the population is classified as young. The herbaceous trend is also up with an increase in the quadrat frequency of grasses and forbs.

##### TREND ASSESSMENT

soil - slightly up (4)

browse - up (5)

herbaceous understory - up (5)

#### 1995 TREND ASSESSMENT

Ground cover characteristics have changed somewhat since 1988. Percent cover of rock has increased while litter cover has declined. Much of this can be attributed to the prolonged drought we have been experiencing since the late 1980's. Percent bare ground has remained low and is currently 17%. Trend for soil is considered stable. Trend for browse is also currently stable. The number of young and decadent plants have fluctuated considerably over the past readings, but the number of mature plants has remained constant at about 4,000 plants/acre. Percent decadency is currently low at 11% with vigor being generally good. The only negative aspect is the high number of heavily hedged sagebrush (60%) and the number of decadent plants (560 plants/acre) in which 36% were classified as dying. Trend for the herbaceous understory is slightly down due to a decline in the sum of nested frequency for perennial grasses and forbs.

##### TREND ASSESSMENT

soil - stable (3)

browse - stable for sagebrush (3)

herbaceous understory - slightly down (2)

## 2000 TREND ASSESSMENT

Trend for soil is currently down. Since the fire in 1998, percent cover of vegetation and litter have declined considerably while percent cover for bare ground has increased from 17% to 50%. Herbaceous vegetation is still abundant. However, erosion is minimized due to the level terrain. The ratio of protective ground cover (vegetation, litter, and cryptogams) to bare soil decreased from 3.4:1 to 2:1 in 2000. Trend for browse is also down with some sagebrush and bitterbrush surviving the fire. Use on the surviving shrubs is light to moderate with percent decadence increasing to 44%. Vigor is normal on most plants. Currently, there is no recruitment of young plants. The resprouting mountain low rabbitbrush is currently the most abundant shrub at 880 plants/acre. These are small plants averaging only 4 inches in height. Trend for the herbaceous understory is mixed. The herbaceous species composition remained basically unchanged following the fire. However, the sum of nested frequency for perennial grasses have increased while frequency of forbs has declined. In 1995, annual and perennial forbs accounted for 64% of the herbaceous understory. After the fire, perennial forbs account for 32% of the herbaceous cover while perennial grasses provide 63%. Some of decline in forb frequency is obviously due to the fire although drought has also greatly influenced the outcome. The herbaceous trend is considered down slightly.

### TREND ASSESSMENT

soil - down (1)

browse - down due to fire (1)

herbaceous understory - slightly down overall, up for grasses but down for forbs (2)

HERBACEOUS TRENDS --  
Herd unit 08B, Study no: 3

| Type                        | Species                       | Nested Frequency |                  |                  | Quadrat Frequency |     |     |     | Average Cover % |       |
|-----------------------------|-------------------------------|------------------|------------------|------------------|-------------------|-----|-----|-----|-----------------|-------|
|                             |                               | '88              | '95              | '00              | '82               | '88 | '95 | '00 | '95             | '00   |
| G                           | Agropyron dasystachyum        | a-               | b <sub>118</sub> | c <sub>191</sub> | -                 | -   | 50  | 70  | 1.03            | 2.88  |
| G                           | Agropyron spicatum            | b <sub>208</sub> | a <sub>77</sub>  | a <sub>68</sub>  | 20                | 78  | 31  | 27  | .96             | 1.82  |
| G                           | Bromus inermis                | -                | -                | -                | -                 | -   | -   | -   | -               | .00   |
| G                           | Bromus tectorum (a)           | -                | a <sub>26</sub>  | b <sub>55</sub>  | -                 | -   | 13  | 23  | .21             | .65   |
| G                           | Carex spp.                    | b <sub>72</sub>  | a <sub>17</sub>  | a <sub>16</sub>  | 20                | 31  | 11  | 7   | .15             | .52   |
| G                           | Koeleria cristata             | b <sub>119</sub> | a <sub>13</sub>  | a <sub>9</sub>   | 33                | 53  | 8   | 4   | .09             | .04   |
| G                           | Poa fendleriana               | 111              | 128              | 129              | -                 | 48  | 50  | 50  | 2.51            | 2.37  |
| G                           | Poa secunda                   | b <sub>166</sub> | a <sub>105</sub> | a <sub>136</sub> | 27                | 69  | 44  | 53  | 1.27            | 1.12  |
| G                           | Sitanion hystrix              | a <sub>14</sub>  | b <sub>41</sub>  | b <sub>34</sub>  | 21                | 8   | 18  | 18  | .45             | .82   |
| G                           | Sporobolus cryptandrus        | -                | 7                | -                | -                 | -   | 2   | -   | .15             | -     |
| G                           | Stipa comata                  | 129              | 82               | 111              | 29                | 58  | 36  | 49  | 1.50            | 3.74  |
| G                           | Stipa lettermani              | b <sub>39</sub>  | a-               | b <sub>2</sub>   | 7                 | 15  | -   | 1   | -               | .15   |
| Total for Annual Grasses    |                               | 0                | 26               | 55               | 0                 | 0   | 13  | 23  | 0.20            | 0.65  |
| Total for Perennial Grasses |                               | 858              | 588              | 696              | 157               | 360 | 250 | 279 | 8.15            | 13.49 |
| Total for Grasses           |                               | 858              | 614              | 751              | 157               | 360 | 263 | 302 | 8.36            | 14.14 |
| F                           | Agoseris glauca               | a-               | b <sub>27</sub>  | c <sub>63</sub>  | -                 | -   | 11  | 26  | .05             | .48   |
| F                           | Allium spp.                   | a-               | b <sub>10</sub>  | a-               | -                 | -   | 6   | -   | .03             | -     |
| F                           | Antennaria rosea              | b <sub>124</sub> | a <sub>41</sub>  | a <sub>30</sub>  | 59                | 51  | 17  | 13  | .86             | .33   |
| F                           | Androsace septentrionalis (a) | -                | 2                | -                | -                 | -   | 2   | -   | .01             | -     |
| F                           | Arabis spp.                   | 11               | 3                | 2                | 1                 | 5   | 1   | 1   | .00             | .00   |
| F                           | Arenaria congesta             | ab <sub>7</sub>  | b <sub>17</sub>  | a <sub>3</sub>   | -                 | 3   | 8   | 1   | .23             | .15   |
| F                           | Astragalus convallarius       | b <sub>7</sub>   | b <sub>14</sub>  | a-               | 3                 | 4   | 5   | -   | .10             | -     |
| F                           | Aster spp.                    | a-               | b <sub>23</sub>  | a-               | -                 | -   | 10  | -   | .12             | -     |
| F                           | Balsamorhiza sagittata        | 5                | 9                | 11               | 11                | 2   | 7   | 6   | .69             | .68   |
| F                           | Calochortus nuttallii         | -                | 3                | -                | -                 | -   | 1   | -   | .00             | -     |
| F                           | Comandra pallida              | -                | 13               | 14               | 9                 | -   | 6   | 8   | .25             | .09   |
| F                           | Collinsia parviflora (a)      | -                | b <sub>148</sub> | a <sub>100</sub> | -                 | -   | 47  | 41  | 2.28            | .30   |
| F                           | Crepis acuminata              | a-               | b <sub>9</sub>   | a-               | -                 | -   | 6   | -   | .03             | -     |
| F                           | Cymopterus spp.               | a-               | b <sub>10</sub>  | a-               | 1                 | -   | 5   | -   | .05             | -     |
| F                           | Descurainia pinnata (a)       | -                | -                | 1                | -                 | -   | -   | 1   | -               | .00   |
| F                           | Draba spp. (a)                | -                | 12               | 1                | -                 | -   | 5   | 1   | .02             | .00   |
| F                           | Erigeron flagellaris          | -                | 2                | 5                | -                 | -   | 1   | 2   | .00             | .06   |
| F                           | Erigeron pumilus              | b <sub>83</sub>  | a <sub>20</sub>  | a <sub>6</sub>   | 30                | 40  | 10  | 3   | .19             | .04   |
| F                           | Eriogonum umbellatum          | b <sub>79</sub>  | b <sub>78</sub>  | a <sub>30</sub>  | 22                | 33  | 31  | 17  | 2.25            | 1.48  |
| F                           | Gayophytum ramosissimum (a)   | -                | 8                | 7                | -                 | -   | 4   | 3   | .02             | .01   |
| F                           | Gilia aggregata               | -                | -                | -                | 1                 | -   | -   | -   | -               | -     |

| Type                      | Species                  | Nested Frequency |                  |                  | Quadrat Frequency |     |     |     | Average Cover % |      |
|---------------------------|--------------------------|------------------|------------------|------------------|-------------------|-----|-----|-----|-----------------|------|
|                           |                          | '88              | '95              | '00              | '82               | '88 | '95 | '00 | '95             | '00  |
| F                         | Heterotheca villosa      | <sub>ab</sub> 31 | <sub>b</sub> 50  | <sub>a</sub> 20  | 8                 | 12  | 21  | 8   | .83             | .22  |
| F                         | Lepidium spp. (a)        | -                | <sub>b</sub> 9   | <sub>a</sub> -   | -                 | -   | 5   | -   | .02             | -    |
| F                         | Linum lewisii            | <sub>b</sub> 38  | <sub>a</sub> 4   | <sub>a</sub> 6   | -                 | 24  | 2   | 3   | .01             | .01  |
| F                         | Lithospermum ruderales   | 18               | 4                | 8                | -                 | 7   | 2   | 4   | .19             | .04  |
| F                         | Lupinus argenteus        | <sub>b</sub> 176 | <sub>a</sub> 100 | <sub>a</sub> 91  | 28                | 75  | 44  | 41  | 1.97            | 1.92 |
| F                         | Machaeranthera canescens | <sub>b</sub> 7   | <sub>a</sub> -   | <sub>a</sub> -   | -                 | 4   | -   | -   | -               | -    |
| F                         | Mertensi fusiformis      | -                | -                | 1                | -                 | -   | -   | 1   | -               | .00  |
| F                         | Orthocarpus tolmiei (a)  | -                | <sub>b</sub> 35  | <sub>a</sub> 7   | -                 | -   | 15  | 3   | .15             | .04  |
| F                         | Penstemon humilis        | <sub>b</sub> 11  | <sub>a</sub> -   | <sub>a</sub> 1   | 3                 | 6   | -   | 1   | -               | .03  |
| F                         | Petrorhiza pumila        | <sub>a</sub> 7   | <sub>b</sub> 31  | <sub>ab</sub> 17 | 3                 | 6   | 14  | 9   | 1.41            | .86  |
| F                         | Phlox longifolia         | <sub>b</sub> 59  | <sub>a</sub> 3   | <sub>a</sub> 7   | -                 | 25  | 2   | 3   | .01             | .04  |
| F                         | Phlox multiflora         | <sub>b</sub> 66  | <sub>ab</sub> 66 | <sub>a</sub> 30  | 37                | 28  | 23  | 14  | 2.30            | .26  |
| F                         | Polygonum douglasii (a)  | -                | <sub>b</sub> 60  | <sub>a</sub> -   | -                 | -   | 27  | -   | .13             | -    |
| F                         | Senecio integerrimus     | <sub>a</sub> -   | <sub>a</sub> -   | <sub>b</sub> 6   | -                 | -   | -   | 3   | -               | .01  |
| F                         | Sedum lanceolatum        | <sub>b</sub> 76  | <sub>b</sub> 100 | <sub>a</sub> 24  | 16                | 36  | 40  | 10  | .42             | .10  |
| F                         | Trifolium gymnocarpon    | 18               | 16               | 7                | 24                | 9   | 7   | 3   | .03             | .01  |
| F                         | Zigadenus spp.           | 4                | -                | -                | -                 | 2   | -   | -   | -               | -    |
| Total for Annual Forbs    |                          | 0                | 274              | 116              | 0                 | 0   | 105 | 49  | 2.65            | 0.37 |
| Total for Perennial Forbs |                          | 827              | 653              | 382              | 255               | 372 | 280 | 177 | 12.10           | 6.86 |
| Total for Forbs           |                          | 827              | 927              | 498              | 255               | 372 | 385 | 226 | 14.75           | 7.24 |

Values with different subscript letters are significantly different at  $\alpha = 0.10$

#### BROWSE TRENDS --

Herd unit 08B, Study no: 3

| Type             | Species                                 | Strip Frequency |     | Average Cover % |      |
|------------------|---|-----------------|-----|-----------------|------|
|                  |   | '95             | '00 | '95             | '00  |
| B                | Artemisia tridentata vaseyana           | 88              | 9   | 14.65           | 1.29 |
| B                | Ceanothus fendleri                      | 0               | 1   | -               | .18  |
| B                | Chrysothamnus viscidiflorus lanceolatus | 25              | 21  | .75             | .20  |
| B                | Gutierrezia sarothrae                   | 3               | 4   | -               | .21  |
| B                | Juniperus osteosperma                   | -               | -   | .15             | -    |
| B                | Pediocactus simpsonii                   | 10              | 6   | .01             | .02  |
| B                | Purshia tridentata                      | 6               | 1   | 2.59            | .01  |
| B                | Tetradymia canescens                    | 4               | 1   | .03             | .00  |
| Total for Browse |   | 136             | 43  | 18.19           | 1.91 |

# BASIC COVER --

Herd unit 08B, Study no: 3

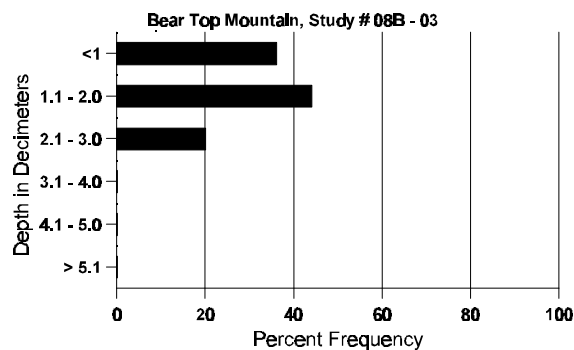
| Cover Type  | Nested Frequency |     | Average Cover % |       |       |       |
|-------------|------------------|-----|-----------------|-------|-------|-------|
|             | '95              | '00 | '82             | '88   | '95   | '00   |
| Vegetation  | 362              | 322 | 12.00           | 12.00 | 38.31 | 27.03 |
| Rock        | 118              | 120 | 1.00            | 4.75  | 11.07 | 13.54 |
| Pavement    | 26               | 98  | 0               | 0     | .04   | .57   |
| Litter      | 386              | 348 | 58.25           | 59.75 | 46.33 | 23.65 |
| Cryptogams  | 140              | 38  | 2.25            | 4.50  | 3.25  | .76   |
| Bare Ground | 259              | 357 | 26.50           | 19.00 | 16.85 | 49.63 |

# SOIL ANALYSIS DATA --

Herd Unit 8B, Study # 3, Study Name: Bear Top Mountain

| Effective rooting depth (inches) | Temp °F (depth) | pH  | %sand | %silt | %clay | %OM | PPM P | PPM K | dS/m |
|----------------------------------|-----------------|-----|-------|-------|-------|-----|-------|-------|------|
| 10.43                            | 57.2 (10.94)    | 6.8 | 65.4  | 19.7  | 14.9  | 2.2 | 4.5   | 201.6 | 0.9  |

# Stoniness Index



# PELLET GROUP FREQUENCY --

Herd unit 08B, Study no: 3

| Type     | Quadrat Frequency |     | Pellet Transect              |                              |
|----------|-------------------|-----|------------------------------|------------------------------|
|          | '95               | '00 | Pellet Groups per Acre<br>00 | Days Use per Acre (ha)<br>00 |
| Rabbit   | 3                 | 6   | 9                            | N/A                          |
| Moose    | -                 | 15  | 287                          | 16 (39)                      |
| Grouse   | -                 | 2   | 9                            | N/A                          |
| Elk      | 7                 | 5   | 96                           | 7 (18)                       |
| Deer     | 16                | 5   | -                            | -                            |
| Antelope | -                 | 4   | 313                          | 24 (60)                      |
| Coyote   | -                 | 2   | -                            | -                            |

## BROWSE CHARACTERISTICS --

Herd unit 08B, Study no: 3

| Area Unit 66B, Study No. 3                     |        |                            |    |     |   |                  |   |   |   |                   |             |     |      |                |                    |                                |    |       |
|--|--------|----------------------------|----|-----|---|------------------|---|---|---|-------------------|-------------|-----|------|----------------|--------------------|--------------------------------|----|-------|
| A<br>G<br>E                                    | Y<br>R | Form Class (No. of Plants) |    |     |   |                  |   |   |   |                   | Vigor Class |     |      |                | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |    | Total |
|  |        | 1                          | 2  | 3   | 4 | 5                | 6 | 7 | 8 | 9                 | 1           | 2   | 3    | 4              |                    |                                |    |       |
| Amelanchier alnifolia                          |        |                            |    |     |   |                  |   |   |   |                   |             |     |      |                |                    |                                |    |       |
| M  | 82     | -                          | -  | -   | - | -                | - | - | - | -                 | -           | -   | -    | -              | 0                  | -                              | -  | 0     |
|  | 88     | -                          | -  | -   | - | -                | - | - | - | -                 | -           | -   | -    | -              | 0                  | -                              | -  | 0     |
|  | 95     | -                          | -  | -   | - | -                | - | - | - | -                 | -           | -   | -    | -              | 0                  | 13                             | 21 | 0     |
|  | 00     | -                          | -  | -   | - | -                | - | - | - | -                 | -           | -   | -    | -              | 0                  | -                              | -  | 0     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |    |     |   | <u>Heavy Use</u> |   |   |   | <u>Poor Vigor</u> |             |     |      | <u>%Change</u> |                    |                                |    |       |
| '82  |        | 00%                        |    |     |   | 00%              |   |   |   | 00%               |             |     |      |                |                    |                                |    |       |
| '88  |        | 00%                        |    |     |   | 00%              |   |   |   | 00%               |             |     |      |                |                    |                                |    |       |
| '95  |        | 00%                        |    |     |   | 00%              |   |   |   | 00%               |             |     |      |                |                    |                                |    |       |
| '00  |        | 00%                        |    |     |   | 00%              |   |   |   | 00%               |             |     |      |                |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |    |     |   |                  |   |   |   |                   |             | '82 | 0    | Dec:           | -                  |                                |    |       |
|  |        |                            |    |     |   |                  |   |   |   |                   |             | '88 | 0    |                | -                  |                                |    |       |
|  |        |                            |    |     |   |                  |   |   |   |                   |             | '95 | 0    |                | -                  |                                |    |       |
|  |        |                            |    |     |   |                  |   |   |   |                   |             | '00 | 0    |                | -                  |                                |    |       |
| Artemisia tridentata vaseyana                  |        |                            |    |     |   |                  |   |   |   |                   |             |     |      |                |                    |                                |    |       |
| S  | 82     | 1                          | -  | -   | - | -                | - | - | - | -                 | 1           | -   | -    | -              | 66                 |                                |    | 1     |
|  | 88     | -                          | -  | -   | - | -                | - | - | - | -                 | -           | -   | -    | -              | 0                  |                                |    | 0     |
|  | 95     | 2                          | -  | -   | - | -                | - | - | - | -                 | 2           | -   | -    | -              | 40                 |                                |    | 2     |
|  | 00     | 1                          | -  | -   | - | -                | - | - | - | -                 | 1           | -   | -    | -              | 20                 |                                |    | 1     |
| Y  | 82     | 20                         | 3  | -   | - | -                | - | - | - | -                 | 23          | -   | -    | -              | 1533               |                                |    | 23    |
|  | 88     | 25                         | 13 | -   | - | -                | - | - | - | -                 | 36          | -   | 2    | -              | 2533               |                                |    | 38    |
|  | 95     | 2                          | 9  | 21  | - | -                | - | - | - | -                 | 31          | -   | -    | 1              | 640                |                                |    | 32    |
|  | 00     | -                          | -  | -   | - | -                | - | - | - | -                 | -           | -   | -    | -              | 0                  |                                |    | 0     |
| M  | 82     | 49                         | 14 | -   | - | -                | - | - | - | -                 | 63          | -   | -    | -              | 4200               | 15                             | 24 | 63    |
|  | 88     | 33                         | 31 | -   | - | -                | - | - | - | -                 | 64          | -   | -    | -              | 4266               | 16                             | 18 | 64    |
|  | 95     | 15                         | 46 | 114 | - | 21               | 4 | - | - | -                 | 200         | -   | -    | -              | 4000               | 15                             | 29 | 200   |
|  | 00     | 5                          | 4  | -   | - | -                | - | - | - | -                 | 5           | 4   | -    | -              | 180                | 12                             | 29 | 9     |
| D  | 82     | 4                          | 3  | 1   | - | -                | - | - | - | -                 | 6           | -   | 2    | -              | 533                |                                |    | 8     |
|  | 88     | 19                         | 13 | 2   | - | -                | - | - | - | -                 | 33          | -   | 1    | -              | 2266               |                                |    | 34    |
|  | 95     | -                          | 4  | 14  | - | 7                | 3 | - | - | -                 | 18          | -   | -    | 10             | 560                |                                |    | 28    |
|  | 00     | 5                          | 2  | -   | - | -                | - | - | - | -                 | 6           | -   | -    | 1              | 140                |                                |    | 7     |
| X  | 82     | -                          | -  | -   | - | -                | - | - | - | -                 | -           | -   | -    | -              | 0                  |                                |    | 0     |
|  | 88     | -                          | -  | -   | - | -                | - | - | - | -                 | -           | -   | -    | -              | 0                  |                                |    | 0     |
|  | 95     | -                          | -  | -   | - | -                | - | - | - | -                 | -           | -   | -    | -              | 380                |                                |    | 19    |
|  | 00     | -                          | -  | -   | - | -                | - | - | - | -                 | -           | -   | -    | -              | 60                 |                                |    | 3     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |    |     |   | <u>Heavy Use</u> |   |   |   | <u>Poor Vigor</u> |             |     |      | <u>%Change</u> |                    |                                |    |       |
| '82  |        | 21%                        |    |     |   | 01%              |   |   |   | 02%               |             |     |      | +31%           |                    |                                |    |       |
| '88  |        | 42%                        |    |     |   | 01%              |   |   |   | 02%               |             |     |      | -43%           |                    |                                |    |       |
| '95  |        | 33%                        |    |     |   | 60%              |   |   |   | 04%               |             |     |      | -94%           |                    |                                |    |       |
| '00  |        | 38%                        |    |     |   | 00%              |   |   |   | 06%               |             |     |      |                |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |    |     |   |                  |   |   |   |                   |             | '82 | 6266 | Dec:           | 9%                 |                                |    |       |
|  |        |                            |    |     |   |                  |   |   |   |                   |             | '88 | 9065 |                | 25%                |                                |    |       |
|  |        |                            |    |     |   |                  |   |   |   |                   |             | '95 | 5200 |                | 11%                |                                |    |       |
|  |        |                            |    |     |   |                  |   |   |   |                   |             | '00 | 320  |                | 44%                |                                |    |       |



| A<br>G<br>E                                    | Y<br>R | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |   | Vigor Class    |     |      |      | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |    | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|------|------|--------------------|--------------------------------|----|-------|
|  |        | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2   | 3    | 4    |                    |                                |    |       |
| Ceanothus fendleri                             |        |                            |   |   |                  |   |   |                   |   |   |                |     |      |      |                    |                                |    |       |
| M  | 82     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | -    | 0                  | -                              | -  | 0     |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | -    | 0                  | -                              | -  | 0     |
|  | 95     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | -    | 0                  | -                              | -  | 0     |
|  | 00     | -                          | - | - | 1                | - | - | -                 | - | - | -              | 1   | -    | -    | -                  | 20                             | 8  | 18    |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |      |      |                    |                                |    |       |
| '82  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |      |                    |                                |    |       |
| '88  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |      |                    |                                |    |       |
| '95  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |      |                    |                                |    |       |
| '00  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '82 | 0    | Dec: | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '88 | 0    |      | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '95 | 0    |      | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '00 | 20   |      | -                  |                                |    |       |
| Chrysothamnus viscidiflorus lanceolatus        |        |                            |   |   |                  |   |   |                   |   |   |                |     |      |      |                    |                                |    |       |
| S  | 82     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -    | -    | 66                 |                                |    | 1     |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | -    | 0                  |                                |    | 0     |
|  | 95     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | -    | 0                  |                                |    | 0     |
|  | 00     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | -    | 0                  |                                |    | 0     |
| Y  | 82     | 16                         | - | - | -                | - | - | -                 | - | - | 16             | -   | -    | -    | 1066               |                                |    | 16    |
|  | 88     | 26                         | 2 | - | 2                | - | - | -                 | - | - | 29             | -   | 1    | -    | 2000               |                                |    | 30    |
|  | 95     | 1                          | - | - | 1                | - | - | -                 | - | - | 2              | -   | -    | -    | 40                 |                                |    | 2     |
|  | 00     | 15                         | - | - | -                | - | - | -                 | - | - | 15             | -   | -    | -    | 300                |                                |    | 15    |
| M  | 82     | 13                         | - | - | -                | - | - | -                 | - | - | 13             | -   | -    | -    | 866                | 8                              | 12 | 13    |
|  | 88     | 14                         | - | - | 3                | - | - | -                 | - | - | 14             | -   | 3    | -    | 1133               | 9                              | 11 | 17    |
|  | 95     | 40                         | - | - | 4                | - | - | -                 | - | - | 44             | -   | -    | -    | 880                | 10                             | 15 | 44    |
|  | 00     | 29                         | - | - | -                | - | - | -                 | - | - | 29             | -   | -    | -    | 580                | 4                              | 5  | 29    |
| D  | 82     | 6                          | - | - | -                | - | - | -                 | - | - | -              | -   | 6    | -    | 400                |                                |    | 6     |
|  | 88     | 3                          | 2 | 1 | -                | - | - | -                 | - | - | 5              | -   | 1    | -    | 400                |                                |    | 6     |
|  | 95     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -    | -    | 20                 |                                |    | 1     |
|  | 00     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | -    | 0                  |                                |    | 0     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |      |      |                    |                                |    |       |
| '82  |        | 00%                        |   |   | 00%              |   |   | 17%               |   |   | +34%           |     |      |      |                    |                                |    |       |
| '88  |        | 08%                        |   |   | 02%              |   |   | 09%               |   |   | -73%           |     |      |      |                    |                                |    |       |
| '95  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | - 6%           |     |      |      |                    |                                |    |       |
| '00  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '82 | 2332 | Dec: | 17%                |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '88 | 3533 |      | 11%                |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '95 | 940  |      | 2%                 |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '00 | 880  |      | 0%                 |                                |    |       |

| A<br>G<br>E                                    | Y<br>R | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |   | Vigor Class    |     |     |      | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |    | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|--------------------|--------------------------------|----|-------|
|  |        | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2   | 3   | 4    |                    |                                |    |       |
| Gutierrezia sarothrae                          |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |    |       |
| Y  | 82     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 95     | 1                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 20                 |                                | 1  |       |
|  | 00     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
| M  | 82     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  | -                              | -  | 0     |
|  | 88     | 1                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 66                 | 5                              | 6  | 1     |
|  | 95     | 2                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 40                 | 4                              | 4  | 2     |
|  | 00     | 7                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 140                | 6                              | 13 | 7     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |    |       |
| '82  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| '88  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | - 9%           |     |     |      |                    |                                |    |       |
| '95  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | +57%           |     |     |      |                    |                                |    |       |
| '00  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '82 | 0   | Dec: | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '88 | 66  |      | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '95 | 60  |      | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '00 | 140 |      | -                  |                                |    |       |
| Pediocactus simpsonii                          |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |    |       |
| S  | 82     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 95     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 00     | 1                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 20                 |                                | 1  |       |
| Y  | 82     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 95     | 1                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 20                 |                                | 1  |       |
|  | 00     | -                          | - | - | 2                | - | - | -                 | - | - | -              | -   | -   | -    | 40                 |                                | 2  |       |
| M  | 82     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  | -                              | -  | 0     |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  | -                              | -  | 0     |
|  | 95     | 10                         | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 200                | 2                              | 3  | 10    |
|  | 00     | 5                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 100                | 2                              | 16 | 5     |
| D  | 82     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 95     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 00     | -                          | - | - | 1                | - | - | -                 | - | - | -              | -   | -   | 1    | 20                 |                                | 1  |       |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |    |       |
| '82  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| '88  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| '95  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | -27%           |     |     |      |                    |                                |    |       |
| '00  |        | 00%                        |   |   | 00%              |   |   | 13%               |   |   |                |     |     |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '82 | 0   | Dec: | 0%                 |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '88 | 0   |      | 0%                 |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '95 | 220 |      | 0%                 |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '00 | 160 |      | 13%                |                                |    |       |

| A<br>G<br>E                                    | Y<br>R | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |   | Vigor Class    |     |     |      | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |    | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|--------------------|--------------------------------|----|-------|
|  |        | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2   | 3   | 4    |                    |                                |    |       |
| Purshia tridentata                             |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |    |       |
| S  | 82     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 95     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 00     | 2                          | - | - | -                | - | - | -                 | - | - | -              | 2   | -   | -    | -                  | 40                             |    | 2     |
| M  | 82     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  | -                              | -  | 0     |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  | -                              | -  | 0     |
|  | 95     | 1                          | 2 | 3 | -                | - | - | -                 | - | - | 6              | -   | -   | -    | 120                | 20                             | 78 | 6     |
|  | 00     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 | 4                              | 9  | 1     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |    |       |
| '82  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| '88  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| '95  |        | 33%                        |   |   | 50%              |   |   | 00%               |   |   | -83%           |     |     |      |                    |                                |    |       |
| '00  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '82 | 0   | Dec: | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '88 | 0   |      | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '95 | 120 |      | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '00 | 20  |      | -                  |                                |    |       |
| Tetradymia canescens                           |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |    |       |
| M  | 82     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 66                 | 17                             | 8  | 1     |
|  | 88     | -                          | 2 | - | -                | - | - | -                 | - | - | 2              | -   | -   | -    | 133                | 13                             | 18 | 2     |
|  | 95     | 4                          | - | - | 1                | - | - | -                 | - | - | 5              | -   | -   | -    | 100                | 10                             | 13 | 5     |
|  | 00     | 4                          | - | - | -                | - | - | -                 | - | - | 4              | -   | -   | -    | 80                 | -                              | -  | 4     |
| D  | 82     | 2                          | - | - | -                | - | - | -                 | - | - | -              | -   | 2   | -    | 133                |                                |    | 2     |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                |    | 0     |
|  | 95     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 |                                |    | 1     |
|  | 00     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                |    | 0     |
| X  | 82     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                |    | 0     |
|  | 88     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                |    | 0     |
|  | 95     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                |    | 0     |
|  | 00     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 20                 |                                |    | 1     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |    |       |
| '82  |        | 00%                        |   |   | 00%              |   |   | 67%               |   |   | -33%           |     |     |      |                    |                                |    |       |
| '88  |        | 100%                       |   |   | 00%              |   |   | 00%               |   |   | -10%           |     |     |      |                    |                                |    |       |
| '95  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | -33%           |     |     |      |                    |                                |    |       |
| '00  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '82 | 199 | Dec: | 67%                |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '88 | 133 |      | 0%                 |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '95 | 120 |      | 17%                |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '00 | 80  |      | 0%                 |                                |    |       |